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ABSTRACT

This report evaluates the increasing use and adaptations of the academic credit system by developing nations in an attempt to improve quality and cost-effectiveness of their higher education systems. Chapter 1 offers an overview of the credit system and explains how it works in breaking down the curriculum into measurable units that can be accrued in various combinations toward a degree. Chapter 2 analyzes the strengths and weakness of the academic credit system. Strengths are identified as learning effectiveness, added flexibility and responsiveness, and cost effectiveness. Weaknesses noted include fragmentation of knowledge, possible distortions in student motivation, problems with credit transferability, and failure to distinguish certification from true education. Chapter 3 specifically addresses the credit system's applicability to developing countries, noting existing models and the rigid nature of most of these nation's higher education systems. Three examples of how countries have adapted the credit system are offered: Thailand, which chose system-wide implementation; India, which implemented the credit system at the Indian Institutes of Technology; and Senegal, which is experimenting with the system at the University of Dakar. (Contains 40 references.) (DB)

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The Academic Credit System in Higher Education:

Effectiveness and Relevance in Developing Countries

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Omporn Regel

Education and Employment Division
Population and Human Resources Department
The World Bank

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Abstract

There is evidence that higher education policies and structures in developing countries need to change as their economies change, if they are to fulfill their mission of meeting the skilled manpower needs of their countries. Among the changes occurring is the adoption by many countries of the academic credit system in an attempt to improve quality and cost-effectiveness of their higher education systems. The academic credit system breaks the curriculum down into measurable units which can be accrued toward a degree in a variety of combinations. Critics of the system believe it fails to produce an "educated person" and does nothing more than fragment higher education into non-interrelated segments. Proponents of the system say it is impossible to define the "educated person," reject the notion of such a definition as rigid and obsolete, and view student curricula choice and student orientated higher education as more appropriate to an era characterized by rapid technological change, open access to higher education, and an increasingly diverse and unpredictable labor market.

Three examples of how countries have adapted the credit system in hopes of meeting their changing needs are discussed. The first is Thailand, which chose system-wide implementation, the second is India, which implemented the credit system at the institutional level in its prestigious Indian Institutes of Technology and the third example is Senegal which is experimenting with academic credit at the departmental level at the University of Dakar.

Successful conversion to the academic credit system, irrespective of the scope of conversion, requires five preconditions. First, the quality of the foreign model must be deemed appropriate, second, the crisis in the higher education system must be in the areas where the credit system has strengths to offer, third, the model must be compatible with the countries educational patterns and the realities of its economy, fourth, local academics must value and support the change and fifth, reinforcement from abroad, in the form of visiting scholars, financial aid and/or fellowships is necessary.

It is concluded that while a comparative perspective is useful, it is seldom possible to directly borrow systems from abroad without some modification, development of supporting infrastructures and a clear understanding of the context in which the system was developed compared with the situation in which it will be applied.

INTRODUCTION

1. After three decades of rapid expansion in higher education, many developing countries are now faced with a situation of uncontrolled enrollment growth, declining financial resources, low quality teaching and research, low internal efficiency, and high graduate under/unemployment. In light of these difficult challenges, many governments have already initiated reforms to improve the quality, relevance, efficiency, and sustainability of the higher education systems.[1]

2. Quality improvement and increased curriculum relevance to job market requirements are important objectives of many reforms. These can be achieved through the use of various mechanisms, one of which is to introduce innovations in academic structures. The academic structures found across higher education systems in many developing countries can be broadly classified into two extreme models: the traditional European model and the American credit model. Foreign to all developing countries, these models vary in their forms of governance, structure, organization, and degree of rigidity; some are more discipline-oriented and structured than others. The traditional European model has a narrowly circumscribed curriculum. The American model, in contrast, being modular, has allowed not only expansion of enrollments but also expansion in curricular scope. American colleges and universities have gradually moved away from the traditional English liberal arts and the German research concept. Continuous assessment of academic work through the use of a course-credit system has been substituted for traditionally spaced yearly examinations. Courses are shorter, and grades are assigned frequently so that students are constantly monitored. Today, many universities in developing countries have already begun to experiment with the American model of academic credits on a pilot basis.

3. The objective of this study is not to promote or criticize the use of the credit system but rather to analyze its potential as an approach which developing countries could consider to improve the quality and cost effectiveness of instruction. Today, the problems confronting developing countries' higher education systems include inefficiencies such as high repetition and dropout rates; a growing gap between what is taught and what is being demanded by the labor market; and the increasing need to provide education for diverse student groups. The study will assess whether the credit system, if carefully adopted by developing countries, could lessen the pressures faced by higher education institutions and improve the quality of the learning process. The emphasis is on the background of and reasons for the academic credit system (the "American" model) and its adoption overseas. Discussion of its implementation, is limited by the scarcity of research material on the subject in developing countries.

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[1] Verspoor, A. "Improvement and Innovation in Higher Education," Higher Education Policy. Forthcoming.

4. The first part of this study provides an overview of the credit system and describes its workings. The strengths and weaknesses of the credit system are assessed in the second part. The third part illustrates the applicability of the credit system in selected developing countries, while the fourth examines what lessons can be drawn from the American and international experiences with the credit system.

I. THE CREDIT SYSTEM

a) Overview

5. Historically, the American academic system was patterned on European models, particularly the British and the German. The British model was transferred to the United States and dominated the organization, standards, and curriculum of American higher education until the mid-nineteenth century. In the late nineteenth century, American higher education was influenced by the German system when research was introduced into the university as a major function and graduate education was developed.[2]

6. One of the major characteristics of the American higher education system today is its use of academic credit accumulation for a degree. Until the 1870's, higher education institutions in America followed the uniform classical curricular patterns common to most European higher education systems. Within the few curricula, the student had little or almost no choice of courses. In the 1870's, the system underwent rapid change. At a philosophical level, there was growing acceptance of student-centered learning and of John Dewey's advocacy of self-realization achieved through study fitting the individual's interest. There was also increasing demand for courses of a practical nature with clear relationships to the real world. At a more immediate level, colleges and universities had begun to experience recruiting difficulties: declining markets served as a stimulus to invention.

7. In 1872 President Eliot initiated the elective system at Harvard University.[3] He replaced the system of the classical fixed curriculum with an increasingly wide choice of courses for students. Starting with electives for senior students only, by 1884 the university offered almost complete

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[2] Brubacher, John. S. and Willis Rudy. 1976. Higher Education in Transition: A History of American Colleges and Universities, 1636-1976 Harper & Row, Publishers, Inc. New York.

[3] Morison, Samuel E. 1964. Three Centuries of Harvard - 1636-1936 The Belknap Press of Harvard University Press. Cambridge, Massachusetts.

freedom of choice to all students and shifted in the 1890's to measuring progress towards a degree on the basis of the accumulation of individual courses rather than completing a total course of study. Other universities and colleges quickly followed Harvard.

8. The credit system emerged as a result of electives.[4] Towards the end of the 19th century and into the early 20th century, it became increasingly common for colleges and universities to list in their catalogues the number of credits offered for each course; the number being determined by the hours of classroom and laboratory work devoted to the course per week. Degree requirements were stated in terms of numbers of required credits as well as in course distribution. Also in the early 1900's, the credit system was extended beyond undergraduate study to include postgraduate programs.

9. The drive behind the introduction of the elective/credit system in the U.S. may have relevance to developing countries contemplating a similar structuring of their higher education systems. The major factor which prompted the replacement of the uniform classical curricula was the need for the system to be more flexible and more suited to contemporary needs. It did not come about as part of the demand from students and/or institutions to facilitate the transfer of students between institutions; this element only emerged as a force much later.

b) How the Credit System Works

10. The use of academic credits enables students to acquire a higher education degree through the accumulation of a wide variety of educational experiences which eventually add up to a degree and provides both the diversity in curricular programs and possibilities for inter-institutional transfer. An academic credit can be defined as:

> The unit by which an institution may measure its course work. The number of credit hours assigned to a course is usually defined by the number of hours per week in class and the number of weeks in the session. One credit hour is usually assigned to a class that meets fifty minutes a week over the period of a semester, quarter or term; in laboratory, field work, drawing, music, practical arts, physical education or similar type of instruction, one credit hour is assigned for a session that meets one or three hours a week for a semester, quarter or term. Quarter credit hours and semester credit hours are the most common systems of measuring course work. Institutions on the trimester plan generally use the semester credit hour

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[4] The concepts underlying the two systems are closely related, yet different. The kind and diversity of knowledge or the subject content required for a degree is a question pertaining to the elective system; how much knowledge is required and how it is measured quantitatively relates to the credit system.

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system. Courses offered in a calendar other than semester and quarter, including summer sessions, may be measured in term credit hours or stated in semester credit hours or quarter hours.[5]

11. The working of the credit system is often linked to the organization of an academic year into two semesters. Literally, the word "semester" means six months; however, for academic purposes, it is usually two 15-16-week periods of instruction into which an academic year is normally divided in American universities. The duration of the semester is an important feature in that it ensures 80 working days per semester or 160 working days in an academic year of nine months. In some universities, the academic year is divided into quarters, lasting approximately 10 ½ weeks.

12. Most American universities require approximately 120 credit hours for a first degree, and the majority of courses are three or four credit hours, i.e. classes are expected to meet for three or four hours weekly. Four-hour courses typically are in the Natural Sciences and require laboratories.

Box 1: Academic Calendar Change Impact on Enrollment Patterns and Instructional Outcomes

The effects of a calendar change from the quarter hour system to the semester system on enrollment patterns, student credit hour productivity, grading patterns, and course completion patterns were investigated using the 1980-1982 data from nine Florida public universities and Iowa State University. An analysis of the average student credit hour load showed a significant reduction at both the upper and graduate levels after conversion to the semester system. A reduction in the course completion rate also occurred under the semester calendar system, along with an increase in the percentage of course withdrawals. Many students, faculty, and administrators reported that the full-time course load under the semester system had been reduced to 12 hours. The perception that a full-time load was based on the number of courses rather than on the number of credit hours was common among University of Central Florida students. While the ideal calendar is open to questioning, the findings seem to favor shorter terms such as those provided under the quarter system.

Source: Coleman, Daniel. 1983. Academic Calendar Change Impact on Enrollment Patterns and Instructional Outcomes. Florida: University of Central Florida.

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[5] National Center for Educational Statistics (Office of Education), Definitions of Student Personnel Terms in Higher Education, OE-50083, U.S. Government Printing Office, Washington, D.C. 1968. pp.14-15.

13. Every student is assigned to an adviser upon entering the university or college. An academic adviser assists the student in selecting appropriate courses leading towards a major field of study. The choice of subjects offered is wide, and one is able to register for interdisciplinary subjects based on aptitudes and personal interest. A science student is not restricted to taking only science subjects; subjects in other disciplines are also required. This factor provides flexibility and diversity for both students and faculty.

14. During the normal 16-week semester, regular tests are given to evaluate the progress of a student. The final grading for an undergraduate degree is based on this continuous evaluation. For post-graduate degrees, in addition to courses, a written comprehensive examination and a thesis or dissertation are generally required.

15. Assessment of quality among the different higher education institutions in the U.S. is done by accreditation agencies.[6] Unlike most countries where the process of accreditation is done by the government, in the U.S., this function is carried out by private agencies.[7] There have evolved more than 80 agencies of various quality; however, only six regional accrediting agencies are widely recognized. Each regional agency has authority to accredit an entire higher education institution. However, when a specialized agency accredits a university, it is only one particular school at the university that has been accredited (e.g. the School of Business Administration). In this case, only the Business Administration degrees of that university are accredited. Such specialized accreditation is for defined curricula.

II. STRENGTHS AND WEAKNESSES OF THE ACADEMIC CREDIT SYSTEM

16. To many observers, the primary advantage of the credit system is that it breaks down the learning experience into measurable units, which can be accumulated towards a degree in a variety of combinations and at different times and places. The system has three broad positive dimensions: a) learning effectiveness; b) flexibility/responsiveness; and c) cost effectiveness/management.

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[6] The process of accreditation is lengthy and often takes several years. All aspects of an institution are examined in depth including the institution's legal status, academic structure, financial stability, physical facilities, quality of faculty and educational resources, and educational philosophy.

[7] Accrediting agencies are evaluated and approved by a private agency, the Council of Post-Secondary Accreditation, and a government agency, the Division of Eligibility and Agency Evaluation of the Department of Education.

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a) STRENGTHS

Learning Effectiveness

a) The credit system provides an up-to-date record of progress toward a degree and a plan for a student's entire educational experience. Through the use of the credit system at the secondary level, post-graduation plans may be laid even before college entry because students' interest and paths to a vocation, profession and further education are clearly mapped in the course and credit structure. It also provides short-term goals and expectations for performance helpful to students not sure of their long-range plans.

b) Because courses, rather than comprehensive examinations, are characteristic of the credit system, it gives considerable independence to teachers in determining what they can teach and how. The semester-long course also eases the anxiety for students taking examinations. Because semester-long courses cover less material than year-long courses, they provide a continuous process of evaluation and leave students with little time for idleness. In countries such as India, Senegal, Uganda and Zimbabwe, universities have suffered from student discontent and examination anxiety which have often led to riots and disturbances and to eventual closures of universities.[8] In the case of Senegal, this was clearly apparent during the "année blanche" period (1987-88) when the University of Dakar was closed for an entire academic year as a result of student unrest.

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[8] Eisemon, Thomas O. and Charles H. Davis. 1991. "Can the Quality of Scientific Training and Research in Africa be Improved?" Minerva, 29. pp.1-26.

Box 2: Credit System Boosts Pass Rate: The Singapore Polytechnics' Experience

Ngee Ann Polytechnic's switch to an American-type academic credit system has resulted in its students getting a higher percentage of passes. Compared with an average polytechnic first year pass rate of 70%, 88% of Ngee Ann Polytechnic's first year students managed to make it to the next semester.

Ngee Ann's principal explained that the improvement stems not so much from the number of students who make it in the first attempt, but the number who may drop out because of the pressure. Since the switch to the credit system, the number of repeat students fell from the previous year's 8.4% to 4.9%, while the drop-out rate improved from 3.7% to 2.6%.

The credit system also permits Ngee Ann Polytechnic to introduce the subject credit system for all its diploma courses, to enable students to choose the number of subjects they wish to study in any one semester. All that is required of the student is that he/she completes the 12 appropriate subjects and one project within five years.

At Singapore Polytechnic, full-time students' can transfer credits from part-time courses. Those who fail in one semester do not have to wait one year to repeat a module. They can easily move on to the next semester even while completing modules from the first semester. At Temasek Polytechnic, the credit system has helped to increase the average pass rate to 85%. Similarly, Singapore Polytechnic's Marine Engineering and Nautical Studies department has improved its overall pass rate by 10%.

The general agreement concerning the use of the credit system among students and faculty in different Polytechnics is that the system forces students to be more attentive to class work and refrain from last minute cramming. The pressure of the final examination is lifted, and students are continuously assessed.

Source: The Straits Times. Saturday, February 8, 1992. p.21.

c) For institutions that award credit for educational experience taking place outside of the classroom, the credit system makes it possible for independent study and a variety of non-traditional learning experiences to be creditable towards a degree, significantly broadening the range of educational experiences open to students. The sanctity of three weekly class meetings per course has already been questioned. Several studies suggest that students are able to learn as well or better with fewer class hours required. Many experiments such as those with independent study or unconventional learning settings have proved successful, e.g., programs at Reed, Oberlin, Antioch, Santa Cruz, and Goddard, among others.

d) When the credit system is combined with course electives, it enables higher education to be more student-oriented and individualized than is possible with a relatively fixed curriculum.

Added Flexibility and Responsiveness

e) The credit system makes it possible to offer higher education in a variety of units by assigning varying amounts of credit to different courses (for example, year, semester, three week or even one week courses), thus eliminating the myth that regardless of subject matter all courses are of equal weight.

f) The credit system offers flexibility to students to change their major field in mid-stream. Instead of requiring the student to begin the program anew, it counts previous work towards the degree, requiring only such additional work as is necessary to fulfil major and related requirements.

g) The credit system offers variety in the academic calendar because learning can be broken up into a range of segments corresponding to the different amounts of academic credit offered. This feature of the credit system facilitates the year-round operation of higher education institutions by permitting summer sessions to become an integral part of higher education offerings. The session often lasts about eight weeks and mainly benefits transient students such as school teachers who are employed during the academic year, students who wish to accelerate their studies, and adults interested in continuing their education.

h) The credit system provides a mechanism enabling students to work towards a degree at their own pace by pursuing higher education on a part-time basis, alternating periods of work and study, and stopping in and out of higher education as they see fit. The system can thus integrate degree study with continuing or recurrent education. A study published in 1988 by U.S. College Entrance Examination Board found that 4.3 percent of adults age 25 and older are engaged in college credit study each year.[9] Applying that 4.3 percent to the approximately 147 million adults who were age 25 and older in 1985 produces a total of about 6.2 million adult students for that year.

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[9] Aslaninan, Carol B. and Henry Brickell. 1988. How Americans in Transition Study for College Credit. New York: College Board Publications.

Box 3: Opening Doors to Higher Education

The university sector in the U.K. is taking part in the Credit Accumulation and Transfer Scheme (CATS). The scheme which was launched in 1986, contributes towards wider access and quality enhancement in higher education. The basic principle of credit accumulation and transfer is that learning, wherever it occurs -- provided it can be assessed -- should be given credit towards an academic award. A series of awards are available at both undergraduate and postgraduate levels. The CAT scheme was devised to assist students transferring from one institution to another, to enter higher education with unconventional entry qualifications, to enter higher education with academic credit, and to construct a program of study combining learning from several different sources.

Helping individual students is a priority of the scheme, and CATS places about 500 students yearly in polytechnics, colleges and universities. The CATS "credit tariff system," which divides the amount of learning for the first degree into 360 points at three different levels, has been accepted throughout the higher education sector (consortia such as the South East England Consortium (SEEC) and the European Credit Transfer Scheme (ECTS)), and specific agreements on credit transfer have been reached with several universities.

CATS' provision of services for employers is rapidly expanding. The in-company courses of more than 30 companies have now been evaluated for credit from Council for National Academic Awards (CNAA), both at undergraduate and postgraduate levels. Companies with whom CATS is working include British Telecom International, IBM, ICL, J Sainsbury plc, and the Woolwich Equitable Building Society.

Sources: Council for National Academic Awards. 1989. Credits for Change: The CNAA Credit Accumulation and Transfer Scheme and the Universities. London: CNAA.

Council for National Academic Awards. 1989. The Work of the Council. London: CNAA.

i) In a credit system, the initiation of new courses tends to be easier than in a system having a fixed curriculum, thus enabling higher education institutions to be rapidly responsive in adapting curricula to new market signals. This responsiveness is further strengthened by its ability to balance student demand, thus avoiding high wastage i.e. higher education institutions can allocate more resources towards trendy departments and cut back course offerings in departments experiencing low demand. In comparison to the traditional system, the flexible nature of the credit system also facilitates smooth curriculum reform.

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j) Another strength of the credit system is that it permits inter-institutional transfer of students, enabling individuals to develop to the limit of their capabilities by permitting them to move from one institution to another in accordance with aspirations and abilities. Credits can be regarded as providing a kind of a common language among institutions, thus enabling transfer to be made with minimal complications. The credit system also preserves the curricular autonomy of higher education institutions such as community colleges, many of whose students typically transfer to a four year university, because it does not require the "sending" institutions to duplicate the exact basic curricula of the institutions admitting transfer students.

Box 4: The ERASMUS Program in the Midst of Change

Established in 1987, the main objective of the Program or the European Community Action Scheme for the Mobility of University Students (ERASMUS) is to increase student mobility among Community countries, thereby providing the possibility for more students to spend part of their studying in another Member State. In addition to the support given to student mobility, ERASMUS also promotes a wide range of other academic activities having a European dimension, notably by providing financial support to facilitate exchanges of teaching staff between higher education institutions throughout the Community.

At the core of the program is the establishment of degrees and course units, known as the European Community Course Credit Transfer System (ECTS) whose central objective is to make credit transfer an effective currency of academic recognition by providing universities admitting students from other Member States with a straightforward and reliable means of assessing such students' previous performance. They would then be able to insert them at appropriate points in the host institution's array of courses, regardless of whether or not an integrated exchange program exists in the areas concerned.

Under the scheme, students who have studied at an ECTS partner institution abroad may return to graduate with full credit at their home institution or go on to study, within the same subject area grouping, at another point or points in the network. In the pilot phase, the five subject areas involved are Business Administration, History, Medicine, Chemistry and Mechanical Engineering. A total of 81 higher education institutions and three consortia from all Member States participate in the Pilot Scheme on the basis of one department per institution and two institutions per subject area from the larger Member States and one institution per subject area from the smaller ones. As members of the network, they receive a grant form the Commission to fund the additional activities involved, including the preparation of an information package for students. Mobility grants are also made available for the participating students, of whom there were 569 at the outset.

Box 4. Continued .....

In its first year of operation, the numbers of students involved in each subject area were generally well balanced, with the exception of Business Administration, where the number was almost double the average. All of the Member States except Belgium, the Netherlands, and the UK were "net exporters" by margins of 3 to 1 in the case of some small 'peripheral' countries (Greece and Denmark), but significantly so even in the case of some "central" ones (the Federal Republic of Germany, France and Spain), while three Member States were net "importers", one marginally (Belgium), another by a margin of 3 to 2 (Ireland) and a third by over 4 to 1 (UK).

By the end of 1989, ERASMUS had, in relation to the resources available to it, developed its maximum potential both qualitatively and quantitatively, continuing to attract the interest and participation of growing numbers of staff and students in universities and other higher education institutions throughout the European Community. The fact that the Program supported almost 5,000 inter-university co-operation agreements involving the mobility of almost 80,000 students over the four years of its existence alone suffices to make the point.

It is clear that the experience acquired from the ERASMUS program and the use of the ECTS will continue to play a significant role in the formulation of policies for fostering the inter-institutional co-operation in higher education which will be needed to channel the political will and provide the practical mechanisms the European Community needs as the process of regional integration is accelerating.

Sources: Martin, Michaela. 1990. European Integration and its Consequences for the Management of IMHE Institutions. Higher Education Management. July 1990., Vol. 2 No. 2. pp. 226-230.

Absalom, Roger. 1990. Practical rather than Declamatory Co-operation: ERASMUS in 1990, an appraisal. European Journal of Education, Vol. 25, No. 1. 1990. pp.39-54.

k) The use of the credit system allows twinning and transfer programs to be developed by higher education institutions. These programs often offer a potential student an opportunity to obtain a foreign degree, both at the undergraduate and graduate levels, without incurring redundant expenses by reducing the number of years spent abroad. Students can complete the first part of the degree in-country and then go overseas to complete the rest of the degree requirements, or vice versa. Twinning arrangements also extend greater course offering.

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Box 5: Twinning and Transfer Arrangements for University Education

The use of the credit system has permitted twinning arrangements to work successfully at the Sedaya College in Malaysia. The College, established to provide basic and advanced knowledge in more than 25 degree programs, is currently twinned with the University of Winnipeg, the University of Manitoba, and Western Illinois University. This is possible because the College has adopted the curriculum and courses of studies of its twinning institutions. Through the use of credit transfer, the twinning program allows Malaysian students to pursue their Bachelor degree by starting their first year (or approximately the first 30 credit hours) at the Sedaya, then complete their second and third years abroad at one of the twinned universities. The twinning arrangements include such diverse programs as Business Studies, Engineering, and Music.

Parallel to the twinning programs, Sedaya College also offers an effective transfer program which is aimed at decreasing the financial pressure placed on working class parents who want to send their children abroad. Through the use of credit transfer, the program has given the opportunity to many students to gain higher educational experiences overseas. In order to reduce cost, students are required to complete part of their degree education, usually the first year or first and second year, in their home country. Students then move abroad to the university of their choice. Canada and the United States are available for placement. Because of the common use of the credit system in these two countries on the one hand and the careful selection of subjects and placement assistance by Sedaya College on the other, students in this program are able to obtain maximum credit transfer and benefit fully from their educational experiences in other countries.

The concept of twinning and transfer programs such as those at Sedaya is fast gaining popularity and is currently offered at 34 other private higher education institutions in Malaysia. In 1988, approximately 67% of those students who went to the U.S. for university education went as transfer students from local private colleges offering these programs. It has been estimated that a student can save as much as M$40,000 (approximately US$109,000) by participating in the program. National Statistics show an annual outflow of M$1.5 billion to finance approximately 68,000 students studying overseas. With such a drain on the foreign exchange, twinning and transfer programs are playing an important role in reducing this outflow.

Sources: Sedaya College. 1992. Prospectus for Students 1991/1992. Petaling Jaya: Sedaya College. Business Times. 1989. Higher Education: Twinning Programs.

Cost Effectiveness and Management

1) In the credit system, a student's performance is measured on a course by course basis. Failure in one course does not greatly hinder progress because the student can either repeat the course or take an alternative course. This failure is not treated as failing the full year; thus, the student does not have to repeat the full year's work or leave the system. As a result, the credit system is more effective at decreasing the cost of training and reducing the number of repeaters and dropouts than the single-

entry and single-exit traditional system. A good example of the positive impact of the credit system can be seen in Indonesia where the system has been most effective in raising internal efficiency. Starting in 1984, the credit system was gradually introduced throughout the higher education system. This shift has been regarded as successful in reducing repetition and drop-out and an increasing proportion of students now complete their first degree in 4-5 years rather than 7-8.[10] Countries experiencing similar high repetition and dropout rates, such as Senegal,and Venezuela, might wish to consider the use of the credit system to increase internal efficiency. For Senegal, using a standard student flow model, the World Bank estimated that the same number of UCAD graduates could be trained in 40% fewer student-years if repetition rates were reduced from the present high level to 20% on average.

m) The minimum required program of study for all students, consisting of the intellectual, aesthetic and philosophical experiences, is believed to help produce a well-rounded individual. In this regard, institutions are able to offer interdisciplinary programs, thus avoiding duplicating required courses in all departments and reducing costs. In addition to the basic course requirements, students can also opt to satisfy their degree requirements by enrolling in courses offered by other departments i.e. engineering students often take a sequence of math courses from the Mathematics Department. This interdisciplinary concept can be clearly seen in a 1990 study prepared by the International Council for Educational Development for the Mexican Secretary of Education which recommended "the replacement of the traditional organization of university academic structure in 'faculties' by a 'departmental' structure that groups departments in a 'division' encompassing related cognate subjects. This would have several advantages. It would permit disciplinary 'service courses' to be provided more efficiently to students in other departments. With appropriate incentives, it would encourage and facilitate interdisciplinary courses and research. By bringing together under one roof all the teachers in a particular discipline, it would greatly enhance possibilities for strong graduate studies and significant research. Not least important, a departmental structure would increase the quality and relevance of instruction at less cost than would a traditional 'faculty'

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[10] Woodhall, Maureen. Forthcoming. Turning Points in the Development of Higher Education in Asia: A Comparative Study of Alternative Patterns of Provision, Financing and Governance, 1960-90. Washington, D.C.: World Bank.

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structure".[11]

n) If the credit system is combined with awarding credit by examination for working students, it enables students to use learning experiences outside the higher education system towards a degree. Today, as many as 1,000 colleges and universities in the U.S. offer older students credit for life experiences. To receive credit, students typically must assemble thick folders to document their knowledge. The folder, which is known as a portfolio, often includes essays, letters of recommendation, awards, licenses, and copies of work the students completed on the job. The portfolio is assessed by faculty members. At some institutions, students may receive credit only if the knowledge they say they have gained is similar to information presented in courses the college offers. At other institutions, students may seek credit for knowledge that does not parallel a specific course as long as faculty members determine that the knowledge is creditworthy.

o) The credit system provides a linkage between the units of educational accomplishment and revenues produced and dollars expended in running higher education institutions. Administrative operations, both managerial and economic, can be expressed in credit hour terms: tuition by credit hours elected, salaries by credit hours taught, facilities by credit hours produced, and programs of study by credit hours required.

p) The credit system also permits departments to combine resources and jointly offer classes to avoid any duplication of courses. In comparison to the traditional system, the credit system optimizes the utilization of human and physical resources. It also provides for a more effective use of faculty members. Professors can be assigned to teach a number of classes during a semester; therefore, they are educating a larger number of students.

q) With the expansion of higher education enrollment and soaring expenditures, the use of credit hours can be seen as the means for bringing some order to management problems endangered by rapid growth. Many states in the U.S. developed funding formulas for public institutions which based financial support largely upon number of student credit hours produced. Universities also may find the use of the credit

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[11] International Council for Educational Development. 1990. Strategy to Improve the Quality of Mexican Higher Education: A Report to the Secretary of Education.

system more suitable when faced with budget constraints. The flexibility of the system allows selected courses to be reduced without major disruption when funding is scarce.

b) WEAKNESSES

> In both the secondary and higher schools, the entire curriculum is organized into relatively minute units of work. Although efforts are always made to insure the pursuit on the part of the student of certain sequences and of a unified program, the result is all too often a mere collection of points and credits. Moreover, as the student remains in the institution from semester to semester, his successes and failures in accumulating these precious credits are meticulously recorded even to fractions of percentages in some office or bureau. After the student has acquired the appropriate number of such disparate units, with but little provision for the integration of his knowledge, he receives either his certificate of graduation from high school or his college degree. Even the granting of their highest academic honor, the degree of doctor of philosophy, has been reduced in certain of the large universities almost to a matter of meeting routine requirements.[12]

17. As with any system, the credit system too has its critics. As far back as forty years ago, critics such as Abraham Flexner described it as "an abominable system, destructive of disinterested and protracted intellectual effort."[13] Flexner was not the first to attack the system, and in recent years its critics have increased. The debate on the use of academic credit has been mostly at the level of undergraduate education. Here, the issue is whether a degree should be defined by the kind of knowledge gained or the quantity of knowledge acquired. Some of the weaknesses of the system, as pointed out by its many critics, are:

a) The credit system may produce a fragmentation of knowledge. A basic course typically lasts for one semester only, and the normal course load for a student in a semester is four to five courses. Consequently, students typically take forty courses towards a degree. The fragmentation could be lessened if the typical course lasted a full academic year instead of a semester, and if the normal semester course load were three courses rather than five. The knowledge then would be accumulated over a longer period of time, and a student would take twelve rather than forty courses to complete his degree.

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[12] Counts, George. 1930. The American Road to Culture: A Social Interpretation of Education in the United States. New York: John Day Co.

[13] Flexner, Abraham. 1968. Universities, American, English, German. Oxford University Press p.64.

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b) The assumption that learning experiences are interchangeable and that different learning experiences offering the same number of credits have equal validity reduces the value of serious scholarly work. Critics of the adult portfolio program (see (n) above) acknowledge that older students may have gained a lot through life's experiences, but colleges should not extend credit for learning they had nothing to do with. As in the words of Chester E. Finn, Jr., a professor of education and public policy at Vanderbilt University:

> The degree is supposed to signify some level of attainment, some fraction of which, it now turns out, has nothing to do with the place awarding the degree. ..... Colleges are hungry for students and will bend over backwards to persuade people that coming there is an easy thing to do. It's like saying: "We'll give you three semester credit just for being a grown-up.[14]

c) The system distorts student motivation in the learning process. Students look at the attainment of a degree as the accumulation of academic credits rather than profitable learning as an end in itself.

d) Credit transferability is not always guaranteed. Losses could be maximized if the individual changes from one institution to another. A critical problem relating to the inter-institutional transfer of students is how to reconcile diversity among institutions while preserving the standards of excellence. Whether a college or university is "accredited" is only one of a variety of factors in credit transfer. In principle, if an institution has been accredited by the various accrediting agencies (most of which do not determine the work required for a unit of academic credit), work at that institution is considered acceptable by all members of that or other regional accrediting associations. However, colleges and universities are rarely obliged to take transfer students because the "sending" institution is accredited. Most base the decision concerning transfer students on their own estimates of the quality of "sending" institutions made possible through informal communication networks among academics and administrators.

e) The flexible nature of the credit system has adverse effects on the students when universities are faced with budget cuts. Common consequences have been narrower course offerings and fewer seats in required courses, thus raising the possibility that

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[14] The Chronicle of Higher Education. April 11, 1990. p. A35. "More Colleges Are Offering Credit to Older Students for Their Experiences on the Job or at Home."

some students may have to stay in school longer to graduate. Today, this situation is familiar in many universities and colleges in the U.S. and in Germany.[15]

f) Assuming that the credit system widens opportunities for earning higher degrees, and that, as a consequence, the demand for degrees spreads, the role of higher education institutions certifying educational experience may come to dominate that of providing it. Furthermore, the flexibility of the credit system may also prompt institutions to be too responsive to student demand, thus distorting the balance between course offerings in trendy departments and in those that are less fashionable.

18. It is apparent from the above that the credit system does not lend itself to easy assessment. The system, as it operates in the U.S., has both its supporters and its critics. The critics feel that by fragmenting higher education into small segments which are not necessarily interrelated, the credit system often fails to produce the "educated person." Supporters of the system, on the other hand, admit the impossibility of defining the "educated person," reject the notion of such a definition as rigid and obsolete, and view student curricula choice and student-oriented higher education as more appropriate to an era characterized by rapid technological change, open access to higher education, and increasingly diverse and unpredictable labor market demand.

III. THE CREDIT SYSTEM AND ITS APPLICABILITY TO DEVELOPING COUNTRIES

19. No academic system develops entirely on its own, and there are elements of the credit system that may be useful to policy-makers and administrators in developing countries. Given the earlier overview of some of the historical and contemporary aspects of the credit system, this section will relate these aspects to other countries.

20. The American innovation and use of the credit system may be useful in thinking about solutions to problems facing higher education in many developing countries. However, it would be a mistake to assume that all of the challenges faced by higher education have been successfully solved in the U.S. and that the immediate problems of developing countries can be resolved by directly applying foreign models.

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[15] Washington Post. October 16, 1991. A3.
Der Spiegel. December 1991. vol 50. Hochschulen: "Bald knallt's"

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a. The Models

21. Most universities in developing countries were established relatively recently, either during colonial rule or immediately after independence. Just as the American higher education system was modelled and shaped after the British and German systems, developing countries inherited their models of university systems from their former colonial powers. For example, Indonesia inherited the Dutch model, Malaysia and Singapore took the British model, Côte d'Ivoire adopted the French model, and the Philippines, the American model. Even Thailand, which remained free from direct colonial control, had its universities patterned after a hybrid of Western models.

22. Foreign to all developing countries, these Western models vary in their forms of governance, structure, organization, and degree of rigidity. Some are more discipline-oriented and structured than others. The two extreme models are the elitist traditional colonial European system and the diversified American course-credit system. The traditional European university had a narrowly circumscribed curriculum. The American university, in contrast, has been open to not only expansion of enrollments but also to expansion in curricular scope. As mentioned above, American colleges and universities have moved away from the traditional English liberal arts and the German research concept. Continuous assessment of academic work through the use of a course-credit system has been substituted for traditionally spaced yearly examinations. Courses are shorter and specific marks are assigned frequently so that students are constantly monitored.

b. The Situation

23. Today, a common situation exists in many developing countries regardless of their regional boundaries. In most cases, a strong colonial influence persists and higher education systems remain too rigid to cope with rapid technological change and a greater degree of economic competitiveness. Except for a few traditional areas of specialization such as medicine and engineering, degree programs are often focussed on single subjects such as History or Language. As a result, entrance into the university frequently means entrance into single-subject programs which, in turn, produces graduates with specialized skills often not suited for the labor market. In many developing countries, the rapid growth of secondary school graduates, liberal admission policies at the university and low internal efficiency have resulted in very high failure rates, particularly during the first year of university education.

24. For dropouts with few or no marketable skills, the system does not allow any credit to be accrued for the years spent in the program. The absence of the credit system makes it difficult for the unemployed graduates and dropouts to move to another area of study without starting the program anew. This is why it is not unusual to see large numbers of students moving from one

department to another, and this explains why many universities are witnessing rapid increases in student population, particularly those that have an open access policy and charge little or no tuition.

Table 1: Repetition and Dropout Rates in Selected Developing Countries (Percentage)

Country	Repetition Rate	Dropout Rate
Algeria	50 *	n.a.
Madagascar	30 *	n.a.
Rwanda	20	25
Senegal	16-55 [16]	n.a.
Tunisia	6-29	43 *
Yemen	n.a.	15-50

Sources: World Bank Data

Note: * First two years of under-graduate study.

25. Currently faced with a crisis of limited resources and declining quality, a number of higher education institutions in developing countries are searching and experimenting with new educational practices. Recent changes that have taken place have been in an "American" direction, featuring concepts such as: addition of new fields of study, decentralization of decision making, and use of the credit system to increase flexibility and mobility. In this regard, the credit system is viewed as an effective method to: a) reduce the high cost generated by the single-entry single-exit system; b) accommodate the diversity of programs of studies which can be tailored to suit individual students; and c) allow students to transfer to another program in mid-stream, thus reducing dropout rates and permitting institutions to respond to the changing job market.

[16] 20% on average. However, students are permitted to repeat twice during the first two years of university. This rule is not followed in practice, and students who have already wasted two years can either be re-oriented to another faculty of be granted a concession. As a result, more than 40% of the student population is made up of repeaters.

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26. For a successful transfer of the credit system to take place, certain preconditions are required, and each individual situation must be carefully analyzed.

c. Preconditions for Successful Transfer

27. While Western models of higher education, whether the rigid British or the flexible American, may play a significant role in promoting structural changes in developing countries, the likelihood of a successful transfer also depends on the following necessary and interrelated preconditions:[17]

a) The perceived quality of the foreign model. Not all Western higher education models are uniformly innovative, progressive, and successful. Careful assessment, therefore, could bring about suitable models to meet local needs;

b) The degree of crisis in the higher education system of developing countries. Developing countries are most receptive to higher education reform in periods of major crisis, particularly if the crisis is in areas where the academic credit system has strengths to offer;

c) The model's appropriateness vis-a-vis the realities of the economy and its compatibility with indigenous educational patterns. As far as the compatibility with the economy is concerned, what is important is that an economic demand must exist for the new kind of educational model. Education innovations must be fully responsive to the needs of the economic sector;

d) The presence of a professional community to transmit the foreign patterns. Local academics and educators must value the change, modify it to suit local needs, and promote acceptance; and

e) Reinforcement from abroad. This reinforcement can either be in the form of visiting scholars, financial aid to operate local institutions, or overseas fellowships. Opportunities should exist to encourage local scholars to participate in professional life outside their country.

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[17] Eisemon, Thomas 1974. U.S. Educated Engineering Faculty in India. Bombay: Tata Institute of Social Science.

d) Case Studies

28. Three case studies illustrate the importance of these preconditions: a) the Thai university system; b) the Indian Institutes of Technology (IITs); and, c) the University of Dakar, Senegal. Among these examples, adoption methods vary significantly: a) System-wide adoption by Thai universities; b) Partial adoption at the institutional level by the IITs; and c) Partial adoption at the departmental level in one faculty at the University of Dakar.

1. SYSTEM-WIDE ADOPTION: THAILAND

29. In the case of Thailand, the movement from the traditional European model towards the American system has been gradual. To resolve the problem of unequal access to higher education and to create greater flexibility within the system, the Thai government has fully adopted the use of the credit model for all the universities. From his comprehensive assessment of the current situation of higher education institutions in Thailand, Watson describes:

> The academic year is 34 weeks long and is modelled on the North American pattern of two semesters with a short break in between. Under the American-type credit-hour system, a regular semester lasts for not less than 16 weeks and a summer session for 8 weeks, though 3 summer sessions equal a regular semester. American influence can also be seen in the terminology for students - freshman, junior and senior, etc., in the 4 year degree course, in the forms of grading and assessment and in the provision of student welfare, counseling, student broadcasting and out-of-school programs such as sporting activities. The strong American influence can be seen in the introduction of a course unit system/semester hours of credit, in the introduction of student transcripts, and in the diversity of courses offered.[18]

30. The American influence can also be seen in the establishment of the Ramkamhaeng University Act (1971), establishing the first "Open" University. The Open University concept itself was modelled after the British. However, the Thais have modified the British Open University and combined the use of academic credits of the American system to fit their own needs. The Open University was innovative in that teaching was to be done largely by closed circuit television, thus making it possible for more students per lecturer to be enrolled in class. Staff were allowed, even encouraged, to sell their lecture notes in book form; and students could take a number of credit courses on a part-time basis and leave the university when they felt it necessary, returning at some

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[18] Watson, Keith. 1989. "Looking West and East: Thailand's Academic Development." In: Altbach, Philip G.; Selvaratnam, Visvanathan (eds): From Dependence to Autonomy: The Development of Asian Universities. Dordrecht and Manila. pp.63-95.

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later stage. Accumulation of academic credits is required for a degree.

31. In the Thai case, the adoption and modification of the American model did not free the system from issues and problems of higher education. While the model offers a high degree of flexibility, it has been criticized for offering greater variety with far less depth of study. Many students cannot relate the different courses on an interdisciplinary basis. The number of semesters, credit requirements, and average and cumulative grade point averages for graduation purposes are listed in the different university catalogs. Normally students must obtain at least a cumulative grade point average of 2.0 for a bachelor's degree and must have a minimum of 80% classroom attendance rate before they can sit for the final examination. However, these prerequisites are not applicable for graduation for the two Open Universities.

32. In comparison to ex-colonial countries, Thailand has developed later than many as a customer for overseas education. Although it was, and remains, common for the well-to-do to send their children abroad, it is only in the last 30 years that this practice has extended to the emerging middle class and to the government. In the 1950s, the expansion of overseas education was stimulated by large-scale official US sponsorship schemes. In view of this expansion, the adoption of the credit system by Thai higher education institutions has become one of the major influencing factors which has encouraged Thai students to pursue higher education in America, both at the undergraduate and the graduate levels. Here, the credit system can be viewed as providing a kind of common understanding and compatibility between Thai and US higher education institutions. It enables transfer to be made with few complications. Table 2 shows the strong preference of Thai students to continue their studies in the U.S.

Table 2: Thai Students Overseas* : Top Ten Destinations

Country	Government Officials	Private Students	Total
USA	1,025	1,351	2,384
Philippines	153	744	897
UK	144	473	617
Japan	323	140	463
Australia	275	37	312
India	100	111	211
France	132	54	186
Germany	120	40	160
Malaysia	67	0	67
Netherlands	54	1	55

* including all students registered with the Civil Service Commission, but not students independently, or through other agencies.

Source: Civil Service Commission statistics for January 1985.

2. PARTIAL ADOPTION AT THE INSTITUTIONAL LEVEL: INDIAN ENGINEERING INSTITUTES

33. Forced by rapid technological advancements and the requirement to respond to diverse needs for high quality manpower, the Indian Institutes of Technology (IITs) together with a few universities and colleges of engineering have adopted the credit system for both undergraduate and post-graduate training. The credit system in the Indian context operates differently from the original American scheme. At most institutions offering engineering programs, courses are sequential, with

little choice of electives, and are offered only once a year. A student failing one course in a semester must wait until the following year to repeat. This often creates discontent among students and frequently leads to student unrest. In the American system, semesters are of equal length. In India, the length of a semester can vary from two to eight months depending on the period of student disturbances. Such occurrences have prompted many to reconsider the use of the academic credit/semester system. Regardless of its imperfections, the credit system operates well in institutions such as the IITs where students are of higher caliber and disturbances are less frequent.

34. Insofar as technical education in India is concerned, the five IITs play a vital role as regional resource centers working closely with other educational institutions and with local industries. The institutes, known as "centers of excellence," are administratively autonomous, free to prescribe their own curricula, set their own examinations, and grant their own degrees. Together, they set standards governing admissions, working conditions, and the use of physical facilities. Objects of national pride, the IITs are centrally financed, and the intention has been to make their programs of the same high standard as those offered in foreign countries. They draw the best students and faculty, offer the best working conditions, and have the most progressive instructional programs.

35. The success of IITs' credit system is owed to the presence of its strong supporting mechanisms. IITs have the most autonomy among Indian engineering institutions. Their planning, development, and admissions policies are coordinated through the Council of the Indian Institutes of Technology and the Ministry of Education. All IITs are centers of internationally recognized research, and all have extensive post-graduate programs. They are the most cosmopolitan in two senses. First, the IITs, created with the aim of achieving international stature, have incorporated many features of foreign education systems such as: a) the adoption of the semester/credit system; b) the course discussion method; c) the use of syllabi similar those offered abroad; and d) the importance they place on consultation and research. Moreover, a majority of the IITs have received foreign support for construction of physical facilities, curricula design, and provision of staff training.

36. In the case of the IITs, the strength of the credit system does not lie in its ability to facilitate institutional transfers but rather in its use of course-by-course examinations to replace yearly final examinations which in many instances generated high student anxiety and led to student riots and disturbances. Because students at IITs are of superior quality, they are mature and conscientious; thus IITs have been largely free of disturbances, and the semester/credit system has been permitted to operate without disruptions. IITs' students are recruited nationwide and thus do not represent any specific constituencies. Seventy percent are far away from home in comparison to twenty six

percent in other engineering institutions in India.[19] Admission to the IITs is highly selective. The rigorous entrance examination is administered countrywide, and scores determine admission and assignment of students to specific engineering fields. Most of the IIT graduates go abroad, largely to prestigious U.S. universities, for postgraduate studies. This has contributed significantly to the brain-drain which is a matter of national concern.

37. The IITs have the highest concentration of well qualified faculty, most with PhDs. The institutions are free to increase the number of staff in aggregate or to increase the number of senior positions. The workload for faculty of similar rank at the different IITs does not vary because the norm is set collectively. Faculty at the IITs are compensated for time spent on extra-curricular activities, and their class load is also reduced. They publish more papers, list more research for foreign professional journals and are satisfied more with the physical facilities than faculty at other engineering institutions.

38. Unlike other engineering institutions which still favor formal lectures over discussion, retain external examinations, limit course choices, and believe that students are too immature to be given the freedom to choose courses, IITs have moved progressively away from these traditional ideas and practices. They value the discussion method, internal assessment, frequent examinations, and student-centered, flexible curricula .

39. In summary, in comparison to other Indian engineering institutions, the five IITs are among the most prestigious. They are progressive and well recognized in the international engineering arena. Their organizational structure, rich endowments of both physical and human resources, cosmopolitanism, close ties to foreign governments and foreign educational assistance, and other vital supporting elements have permitted them to reap the benefit of the many positive features of the credit system. The IITs' success in adopting the credit system has been accomplished in the broadest sense. Just as in the U.S., the benefits of the credit system to the IITs also rests more on the underlying premises on which the credit system operates than on the credit system itself.

3. PARTIAL ADOPTION AT THE DEPARTMENTAL LEVEL: UNIVERSITY OF DAKAR, SENEGAL

40. Senegal presents another interesting case. As in most African Francophone countries, Senegal's higher education system is modelled after the French system. A rigid curriculum, rapid enrollment growth, high repetition rate, and inappropriate program content brought about reform

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[19] Eisemon, Thomas 1974. U.S. Educated Engineering Faculty in India. Bombay: Tata Institute of Social Science.

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attempts in 1969, 1970 and 1981. More recently, in October of 1990, the University of Dakar (UCAD), introduced the use of the credit system into three of its departments to increase the internal efficiency. The movement away from the traditional concept of final examinations to the adoption of a modular approach with core and elective courses is currently in place on a pilot basis in the departments in the Faculty of Humanities. It is expected that the internal efficiency of these departments will increase as a result of the reduction in the repetition rate.

> This type of academic organization, which could be set up only in departments without excess enrollments, would have several advantages over the prevailing pass-fail final examination system. The internal efficiency of the departments involved would increase significantly with the disappearance of the widespread phenomenon of repetition. The quality of learning would improve as students would be assessed on a continuous basis. Finally savings could be achieved by avoiding duplications of courses taught in as far as several faculties would be served by a given department for subjects included in the curriculum of different specializations (e.g. language, informatics, statistics, mathematics). In this connection, the suppression of the second session of final examinations in September/October of each academic year would allow for a longer period of studies. An experiment is currently underway at the Faculty of Humanities, in the departments of Geography, History and Philosophy, to introduce a modular approach with core courses and optional courses and a system of continuing evaluation. The preliminary results indicate much higher success rates in these subjects (between 18% and 68% versus an overall rate of 13% in the previous years).[20]

41. The credit system is also being introduced at the newly established University of Saint-Louis in place of the traditional "pass-or-fail" examination at the end of the academic year.

42. While the experiment with the credit system can have a positive impact in the department concerned at UCAD, it is likely to suffer from several limitations. First, the number of teachers in those departments may not be sufficient to run credit-based courses, considering the requirements in terms of continuous assessment of the students. Second, some of the courses which can be chosen as electives by the students, for example economics, have to be taken in departments/faculties not operating under the credit system. Third, by maintaining the second final examination session in October, the departments experimenting with credit-based courses defeat the purpose of the reform which is to spend less time on examinations and reduce wastage.

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[20] Salmi, Jamil. 1991 "Revitalizing Higher Education in Senegal: The Challenge of Reform". Washington DC: World Bank. Processed.

IV. LESSONS LEARNED

> "The real unit is the student. He is the only thing in education that is an end in itself."
>
> President Abbott L. Lowell of Harvard

43. For most observers, the mechanics of the credit system promotes motivation, and the students are fully engaged throughout the academic year. The system permits little time for slacking off. Flexibility allows for choice of a wide range of course combinations. Continuous evaluation throughout the semester lessens examination pressure on students, decreases cramming of subject matter, and permits a clear understanding of the course content. Failure in a particular course does not hinder progress because the student can either repeat the course or take an alternative course. The structure of the credit system reduces repetition, wastage, and stagnation. Despite its many positive features, the credit system also has numerous inherent weaknesses, a major one of which is that it fragments knowledge.

44. The credit system is gradually being adopted by many developing countries. World-wide experience indicates that as economies change and grow, higher education systems need to change as well if skilled manpower needs are to be met efficiently. The economies of many developing countries are indeed changing, and there is evidence that higher education policies and structures established for earlier periods need to be reassessed. Today, the growing need for structural change has been recognized by policy makers in many developed and developing countries, and many changes that have taken place have been strongly influenced by the American model.

45. Because of its large, flexible, and complex academic system, because English is the main language of communication, because many of the key journals and publishers are in the U.S., and because many scholars and policy-makers have studied in the United States, the American system is a powerful attraction. The adoption of the credit system is becoming increasingly evident in developing countries. The use of the credit transfer, for example, has played a major role in many Asian countries as many are attempting to increase diversification of institutions and programs through the creation of specialized short-cycle and vocational institutions, polytechnics and open universities using distance education. This pattern of diversification is expected to continue strongly into the 1990s. Higher education institutions in Singapore, for example, are establishing links among institutions through the use of credit transfer arrangements. The aim is to use credit accumulation as a screening devise to give competent polytechnic students the opportunity to transfer to the University of Singapore after two years. Credit transfer will also support linkages with foreign universities and are being developed in institutions both in Singapore and Malaysia. In addition to the countries mentioned earlier, there are many others which are experimenting with or

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contemplating the use of the credit system such as China, Mozambique, Niger, Uganda, and Cameroon. The Chinese experience in the 1980s shows that in terms of the organization of knowledge, specializations were being more broadly defined, particularly in the Natural Science and Engineering programs, allowing students to chose up to 30% of their courses and making possible some interdisciplinary study. There is a reduction in the number of class hours required, giving more time for individual and small group study.[21]

46. However, proposals to introduce the credit system are not always welcome. Students and professors are sometimes afraid of abandoning established practices. In France, for example, the Faculty of Law recently rejected the credit system on the grounds that their discipline does not lend itself to it. In Morocco, after four years of preparation involving both the administration and teachers, the decision to introduce the credit system has been postponed indefinitely for political reasons. In Francophone African countries, there is a fear that adopting the credit system may jeopardize quality of undergraduate education. It is argued that the student population is far from homogeneous especially where open access to higher education exists. However, as social demand for higher education continues to increase and as part-time/continuing education continues to grow, the use of the credit system may ease some of the demand pressure. In Latin American countries because of the autonomous character of many university academic faculties, agreement among them on credit acceptability and transferability is difficult to achieve.

47. For developing countries, "adoption" of the credit system must be carefully assessed. As with the imposition of higher education models through colonialism, adoption of the credit system too can bring difficulties if hastily implemented. One must be cautious with the idea that by attaching credit to learning experiences, educational opportunity will be broadened through inter-institutional transfer, course offerings will be more diversified, and higher education will become more student-oriented. In the case of Thailand, the adoption of the credit system for all higher education institutions has provided the necessary supporting mechanisms to permit successful operation. However, while the experiment with the credit system in Senegal can have a positive impact in the departments concerned at UCAD, it is likely to suffer from serious limitations.

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[21] Hayhoe, Ruth. 1989. China's Universities and the Open Door. New York: M.E. Sharpe, Inc.

V. CONCLUSION

48. The adoption of the credit system cannot assure change. All the credit system can do is assign a numerical value to individual courses so that progress towards a degree can be quantified. The system as it exists in the U.S. is not readily exportable. The flexibility of the U.S. system depends largely upon reinforcing mechanisms such as how individual disciplines, faculties, and institutions rank each other and each other's students, and levels of support from the administration, the faculty, and the students. The type of model adopted by universities in developing countries and the emphasis on the use of the credit system will depend largely upon the acceptability of the model by national authorities in charge of higher education. It is important to stress that universities by themselves cannot effectively adopt the use of the system without the broad guidelines and support of these agencies. The credit system can only be usefully exported to developing countries if higher education systems in those countries share similar goals: high degrees of flexibility, wide access, inter-faculty and inter-institutional transfer, curricula choice, the integration of recurrent education with the degree system, student-oriented higher education, and the application of external experiences toward a degree. In addition, these countries have to adapt the credit system to suit their own national constraints and aspirations.

49. It would be misleading to leave the impression that developing countries could easily adopt the credit system without much planning. Among the major items countries should consider before adopting the system are:

- the presence of strong and continual commitment/support from the national authority in charge of higher education;
- the acceptance and support from administrators, faculty members and students;
- the establishment of accrediting agencies to show that work at one institution is deemed acceptable by all members of that or other regional accrediting associations;
- the restructuring of the curricula to provide a coherent program of studies;
- the installation of an effective monitoring mechanism i.e., a Management Information System (MIS) to assess the teaching force requirement and students' academic performance;

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- the provision of adequate amount of teaching staff and physical resources to accommodate the structural change;

- the provision of more than one admission period during the academic year for effective implementation of the credit system; and

- the establishment of part-time programs for working students and those with other personal commitments;

50. While there is a growing acceptance of the need for structural change to respond to the crisis in higher education, the adoption of the credit system by no means can come about without difficulties. Countries contemplating its use should:

- avoid offering year-long courses and linking these courses through prerequisites;

- realize that the major drawback of the credit system is fragmentation of the knowledge of a discipline. One possible solution is to have a comprehensive examination at the end of the program or offer courses that aim at synthesizing the knowledge. This is feasible in the science and engineering disciplines where each advanced course builds upon the pre-requisite lower level courses; and

- provide a balance between the amount of time spent for theory and practical work, especially for those disciplines that require laboratory work. Separate laboratory classes should be offered;

51. The record indicates that rapid and radical change of a system is not likely to be effective. The effective transitional period from one model to another may take a decade or more, and time is vital for the credit system to become fully workable and for the support mechanisms to develop. However, while undergoing this period, countries should strongly avoid combining models of higher education. At the National University of Lesotho, for example, an initial effort to combine aspects of British academic requirements with a modified American academic credit system has created a complex and fragmented hybrid program, making it difficult for students to undertake a coherent program of studies. Excessive faculty time has also been absorbed in administration and paperwork

at the expense of tutorial and research activities. The system is now being revised.[22] In the case of a time overlap, the flexible feature of the credit system allows countries to gradually adopt and experiment without disturbing the overall balance. In many cases, the credit system is introduced on a pilot basis.

52. The conclusion here is that a comparative perspective is useful but that it is seldom possible to directly borrow systems from abroad without some modification, development of supporting infrastructure and a clear understanding of the context in which the system has developed as well as the situation in which it will be applied. It is important to recognize that the development of the credit system in America took place over a long period of time, and the system continuously responded to other factors which helped form today's contemporary American universities.

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